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It is the thought that that dear face—

Oh, bitter, bitter pain !—

Is blotted out through time and space
For ever from my brain !

My mother, darling, lay my head
Upon thy own lov'd breast,
And let thy voice low music shed
To lull thy child to rest ;

And press thy soft and dewy kiss
Upon his beating brow,
And let him feel, or fancy bliss—
'Tis all that's left him now.

What though the noonday's sunny prime
Can yield unnumbered charms,
Give me the silent midnight time
That lays me in thy arms.

For there I dream of joy and light,
The things I once could prize,
Ere darkness threw its dreary blight
Upon my glad young eyes.

And in the same bright dreamy thought,
I gaze upon once more
My mother's face, with feeling fraught
E'en deeper than of yore.

Yet do not weep, my mother dear,
Thy love is more than light—
Thy soothing hand, thy tender tear,
More blessed e'en than sight !

And while that hand is clasped in mine,
My fault'ring steps to guide,
I will not murmur or repine,
Or grieve for aught beside.

But, mother, when I soar away,
From life's drear darkness free,
Oh ! shall I not through heaven's long day
Live gazing upon thee !

W. C. L.

THE REAL "TEMPERANCE CORDIAL."

BY MRS S. C. HALL.

"WELL," said Andrew Furlong to James Lacey, "well ! that ginger cordial, of all the things I ever tasted, is the nicest and warmest. It's beautiful stuff ; and so cheap."

"What good does it do ye, Andrew ? and what want have you of it ?" inquired James Lacey.

"What good does it do me !" repeated Andrew, rubbing his forehead in a manner that showed he was perplexed by the question ; "why, no great good, to be sure ; and I can't say I've any want of it ; for since I became a member of the 'Total Abstinence Society,' I've lost the megrim in my head and the weakness I used to have about my heart. I'm as strong and hearty in myself as any one can be, God be praised ! And sure, James, neither of us could turn out in such a coat as *this*, this time twelvemonth."

"And that's true," replied James ; "but we must remember that if leaving off whisky enables us to show a good habit, taking to 'ginger cordial,' or any thing of that kind, will soon wear a hole in it."

"You are always fond of your fun," replied Andrew. "How can you prove that ?"

"Easy enough," said James. "Intoxication was the worst part of a whisky-drinking habit ; but it was not the only bad part. It spent *TIME*, and it spent what well-managed time always gives, *MONEY*. Now, though they do say—mind, I'm not quite sure about it, for they *may* put things in it they don't own to, and your eyes look brighter, and your cheek more flushed than if you had been drinking nothing stronger than milk or water—but they *do* say that ginger cordials, and all kinds of cordials, do not intoxicate. I will grant this ; but you cannot deny that they waste both time and money."

"Oh, bother !" exclaimed Andrew. "I only went with two or three other boys to have a glass, and I don't think we spent more than half an hour—not three quarters, certainly ; and there's no great harm in laying out a penny or twopence that way, now and again."

"Half an hour even, breaks a day," said James, "and what is worse, it unsettles the mind for work ; and we ought to be very careful of any return to the *old habit*, that has destroyed many of us, body and soul, and made the name of an Irishman a by-word and a reproach, instead of

a glory and an honour. A penny, Andrew, *breaks the silver shilling into coppers* ; and twopence will buy half a stone of potatoes—that's a consideration. If we don't manage to keep things comfortable at home, the women won't have the heart to mend the coat. Not," added James with a sly smile, "that I can deny having taken to *TEMPERANCE CORDIALS* myself."

"You!" shouted Andrew, "you, and a pretty fellow you are to be blaming me, and then forced to confess you have taken to them yourself. But I suppose they'll wear no hole in your coat ? Oh, to be sure not, you are such a good manager !"

"Indeed," answered James, "I was anything but a good manager eighteen months ago : as you well know, I was in rags, never at my work of a Monday, and seldom on Tuesday. My poor wife, my gentle patient Mary, often bore hard words ; and though she will not own it, I fear still harder blows, when I had driven away my senses. My children were pale, half-starved, naked creatures, disputing a potato with the pig my wife tried to keep to pay the rent, well knowing I would never do it. Now——"

"But the cordial, my boy !" interrupted Andrew. "the cordial !—sure I believe every word of what you've been telling me is as true as gospel ; ain't there hundreds, ay, thousands, at this moment on Ireland's blessed ground, that can tell the same story. But the cordial ! and to think of your never owning it before : is it ginger, or anniseed, or pepper-mint ?"

"None of these—and yet it's the *rale* thing, my boy."

"Well, then," persisted Andrew, "let's have a drop of it ; you're not going, I'm sure, to drink by yourself—and as I've broke the afternoon——"

A very heavy shadow passed over James's face, for he saw that there must have been something hotter than even ginger in the "temperance cordial," as it is falsely called, that Andrew had taken, or else he would have endeavoured to redeem lost time, not to waste more ; and he thought how much better the REAL temperance cordial was that, instead of exciting the brain, only warms the heart.

"No," he replied after a pause, "I must go and finish what I was about ; but this evening at seven o'clock meet me at the end of our lane, and then I'll be very happy of your company."

Andrew was sorely puzzled to discover what James's cordial could be, and was forced to confess to himself that he hoped it would be different from what he had taken that afternoon, which certainly had made him feel confused and inactive.

At the appointed hour the friends met in the lane.

"Which way do we go ?" inquired Andrew.

"Home," was James's brief reply.

"Oh, you take it at home ?" said Andrew.

"I make it at home," answered James.

"Well," observed Andrew, "that's very good of the woman that owns ye. Now, mine takes on so about a drop of any thing, that she's as hard almost on the cordials as she used to be on the whisky."

"My Mary helps to make mine," observed James.

"And do you bottle it or keep it on draught ?" inquired Andrew, very much interested in the "cordial" question.

James laughed very heartily at this, and answered,

"Oh, I keep mine on draught—always on draught ; there's nothing like having plenty of a good thing, so I keep mine always on draught ;" and then James laughed again, and so heartily, that Andrew thought surely his real temperance cordial must contain something quite as strong as what he had blamed him for taking.

James's cottage door was open, and as they approached it they saw a good deal of what was going forward within. A square table, placed in the centre of the little kitchen, was covered by a clean white cloth—knives, forks, and plates for the whole family, were ranged upon it in excellent order ; the hearth had been swept, the house was clean, the children rosy, well dressed, and all doing something. "Mary," whom her husband had characterised as "the patient," was busy and bustling, in the very act of adding to the coffee, which was steaming on the table, the substantial accompaniments of fried eggs and bacon, with a large dish of potatoes. When the children saw their father, they ran to meet him with a great shout, and clung around to tell him all they had done that day. The eldest girl declared she had achieved the heel of a stocking ; one boy wanted his father to come and see how straight he had planted the cabbages ; while another avowed his proficiency in addition, and volunteered to do a sum instantaneously upon a slate which he had just cleaned. Happi-

ness in a cottage seems always more real than it does in a gorgeous palace. It is not wasted in large rooms—it is concentrated—a great deal of love in a small space—a great, great deal of joy and hope within narrow walls, and compressed, as it were, by a low roof. Is it not a blessed thing that the most moderate means become enlarged by the affections?—that the love of a peasant within his sphere, is as deep, as fervent, as true, as lasting, as sweet, as the love of a prince?—that all our best and purest affections will grow and expand in the poorest *worldly* soil?—and that we need not be rich to be happy? James felt all this and more when he entered his cottage, and was thankful to God who had opened his eyes, and taught him what a number of this world's gifts, that were within even his humble reach, might be enjoyed without sin. He stood—a poor but happy father within the sacred temple of his home; and Andrew had the warm heart of an Irishman beating in his bosom, and consequently shared his joy.

"I told you," said James, "I had the *true temperance cordial* at home—do you not see it in the simple prosperity by which, owing to the blessings of temperance, I am surrounded?—do you not see it in the rosy cheeks of my children, in the smiling eyes of my wife—did I not tell truly that she helped to make it? Is not this a true cordial," he continued, while his own eyes glistened with manly tears, "is not the prosperity of this cottage a *true temperance cordial*?—and is it not *always on draught*, flowing from an ever-filling fountain? Am I not right, Andrew; and will you not forthwith take my receipt, and make it for yourself? You will never wish for any other: it is warmer than ginger, and sweeter than aniseed. I am sure you will agree with me that a loving wife, in the enjoyment of the humble comforts which an industrious *sober* husband can bestow, smiling, healthy, well-clad children, and a clean cabin, where the fear of God banishes all other fears, make

THE TRUE TEMPERANCE CORDIAL!"

THE SAP IN VEGETABLES.

FIRST ARTICLE.

BOTANISTS describe two kinds of vegetable sap; the one is called the ascending or unelaborated sap, the other the descending or elaborated sap. If a young branch be cut across in the spring season, the newly exposed surfaces will be found rapidly to cover themselves with a dew, especially that portion which is continuous with the trunk—this moisture is the ascending sap: while if during the summer or autumn a piece of twine be tightly drawn and knotted round a young branch of lilac, the part above this ligature will shortly become swollen, and will bulge out on every side, in consequence of an impediment having been thus presented to the downward flow of the descending sap, which will be therefore forced to accumulate in the situation described. The reader may perceive that the origin from whence these two kinds of sap are derived, their chemical composition, the part of the vegetable through which they pass, the causes which produce the ascent of one and the descent of the other, together with the uses of both in the vegetable economy, are questions of great interest, as well to the farmer as the horticulturist.

The source from whence the ascending sap is derived is the aliment absorbed by the roots from the soil. This aliment consists essentially of two substances; one of these being sufficiently familiar, namely, water; and the other commonly existing in the atmosphere under the form of gas or air, but likewise capable of solution in water, namely, carbonic acid; this substance is known to every one as the cause, by its escape, of the boiling appearance seen in freshly uncorked soda water. These two substances constitute the necessary aliment of vegetables: at the same time it is notorious that various matters, such as manures, earths, &c, greatly facilitate the growth of plants; but these matters produce this effect either by supplying a greater quantity of carbonic acid, or by acting in a manner similar to condiments; for in the same way as spices taken into the stomach along with food invigorate the digestive power, so do many minerals, when absorbed by the roots, operate in promoting the nutrition of vegetables.

The chemical composition of the ascending sap is chiefly a solution of sugar and gum in water. In the northern states of America, sugar in large quantities is obtained from some species of maple, principally the sugar maple and swamp maple of Canada, by boring the stem, collecting the ascending sap which flows from the wound, and evaporating away its

watery portions. It is an interesting question, from whence proceed the sugar and gum contained in this ascending sap? The only satisfactory reply to this question is, that these substances become formed out of the water and carbonic acid absorbed from the soil; but this is a transformation which cannot be effected by the most expert chemist, so that we find in this, as in many other instances, a living body is a laboratory in which Nature executes changes far transcending the loftiest efforts of man's ingenuity.

The part of the vegetable through which the sap ascends can be easily shown in any of the ordinary trees of this country. If a branch from a currant shrub be placed with its inferior and newly cut surface immersed at first in a solution of green vitriol and afterwards in an infusion of nutgalls, the course through which these fluids ascend may be traced by the black colour produced by their mixture; for every one knows that a mixture of green vitriol and nutgalls produces ink, and in the experiment just described, the solutions of these substances following each other in their ascent, inscribe in a manner on the interior of the branch the path which they successively pursued. This course will be found to exist between the bark and the pith, these parts being quite unchanged, while the intermediate portion of wood will be deeply coloured.

The causes which produce the ascent of the sap are of a very powerful nature. The celebrated Hales ascertained that a vine branch, in a few days, sucked up water with a force equal to the weight of sixteen pounds on the square inch: this was a power greater than atmospheric pressure; and when it is recollected that the pressure of the atmosphere is capable of lifting thirty-three or thirty-four feet of water in a common pump, some estimate may be formed of the force with which the sap ascends. This ascent appears to be produced by the influence of two causes: the one, a quality peculiar to living beings, by which the buds in common with all growing organs are capable of attracting or sucking towards them the juices necessary for their nutrition; and in agreement with this, the sap is found to ascend in the first instance near the buds: the other, a general property of all matter which has been but lately discovered. This latter property, which has been called endosmose, is found to operate when two fluids of different densities are separated by a membrane. Under these circumstances, and in obedience to an attraction for each other, both fluids pass through the membrane, and mix together; but the denser and thicker fluid finding a greater difficulty to penetrate the membrane than the lighter and thinner, consequently passes through in less quantity. To illustrate this, let us suppose a bladder containing a little syrup, and placed in a vessel of water, and we will have the conditions necessary for endosmose: the syrup and water will both pass through the bladder in opposite directions, but a greater quantity of water will pass into the syrup, than of the latter into the water. It will be evident to the reader that this excess of thin liquid passing into the denser will constitute a force or power which will require an equal force to neutralise it; and it has been ascertained that the tendency of water to penetrate a membrane for the purpose of mixing with a syrup of once and a third its own specific weight, required a force equal to sixty-three pounds on the square inch to overcome it. Now, a plant growing in the ground is similarly circumstanced to the bladder in this experiment: its roots furnished with extremities of spongy membrane are interposed between thin water and carbonic acid externally, and a syrupy solution of sugar and gum internally. Now, under these circumstances we need not be surprised if an endosmose should operate, abundantly sufficient to elevate the sap with a force even greater than that determined by Hales.

The use of the ascending sap in the vegetable economy is the last subject which we shall consider in this article. On a future occasion we shall endeavour to show that it is out of the ascending sap that the descending or elaborated sap is chiefly formed; but besides this utility of the ascending sap, as the source of the descending sap, the former has special functions of its own to perform. If we inquire what period of the year is the ascending sap in greatest quantity, we shall find it to be during the spring season. Now, this is the time when the buds become pushed out into branches, and the young leaves peep forth: the roots also during this season increase in thickness. Another means which we possess of ascertaining the uses of this sap, is by protecting plants from the influence of light: in total darkness no elaborated sap is ever formed; therefore, whatever vegetation may then take place, must be solely at the expense of the ascending sap. Under such